SIEMENS

MULTIMOBIL 5C

SP

Wiring Diagrams

Wiring Description

© Siemens AG 2005
The reproduction, transmission or use of this document or its contents is not permitted without express written authority. Offenders will be liable for damages. All rights, including rights created by patent grant or registration of a utility model or design, are reserved.

English
Print No.: SPR2-125.844.02.01.02
Doc. Gen. Date: 10.05
Replaces: n.a.

Multimobil 5C

Med

Wiring Description

Version: 5.0

Copyright © SIEMENS LTD.,MED INDIA

Copyright © SIEMENS LTD. All rights reserved. For internal use only

INDEX

1 WIRING DESCRIPTION 3

1.1 MAINS DISTRIBUTION 3
1.1.1 For units with 230V Supply 3
1.1.2 For Units with 110V Supply 4
1.2 MOTOR OPERATION 5
1.3 FLUOROSCOPY/ RADIOGRAPHY MODE SELECTION 5
1.4 SWITCHING OFF THE UNIT 5

Copyright © SIEMENS LTD. All rights reserved. For internal use only

1 Wiring Description

1.1Mains Distribution

1.1.1 For units with 230V Supply

When the MCB is switched ON, Line and Neutral is routed through line filter, U1, U2 fuses, and mains voltage of 240V appears across X1.1 and X1.2 on D506. On D506, this mains voltage of 240V AC is then stepped down to 15 V AC, rectified and regulated to 12 VDC which is used to energize ON /OFF relay coils K1 & K2.

The unit is switched on by depressing the switch on top panel; the circuit for the relay coil K2 is energised and K2 contact 6-8 closes. When K2 5-7 closes, the mains voltage is available at the following points:

- X1.5 and X1.2 – CS contactor coil.
- X1.7 and X1.2 - CCU
- X1.9 and X1.2 - through K3 relay NO contact 4-8 to US contactor coil.
- X1.10 and X1.2 - through K5 relay NO contact 4-8 to DL contactor coil.
- LN and X1.2 - through K6relay NO contact 4-8 to LN contactor coil.
- X1.6 and X1.4 –
  - Through U7, SMPS 1, X15 on D915, X3.10 (+15V) X3.9 (AG), X3.8 (-15V) on D508.
  - Through U7, SMPS 2, X3.1 (+15V) X3.3 (+5V), X3.2 (-DG &AG) on D508.
- X1.8 and X1.3 –
  - Through U8 , SMPS D982 and across X4.6 ,X4.8
  - Through U8 SMPS D985 and across X4.7, X4.8.

With CS contactor is energised:

- NO contacts 14-13 close –
  240V AC routed through parallel combination of R1and R4 resistors, NC contacts 21-22 of US contactor, NC contacts 21-22 of LN contactor across pin 1&2 of main bridge rectifier V1 charges capacitor bank and through NC contacts 31-32 of US, parallel combination R3,R2.
- NO contacts 43-44 close –
  240V AC is applied across X9.1 and X9.3 of mains transformer T1. At the secondary of T1 the following voltages are applied to:
  - 0V – X4.5 and X4.7on D506
  - 20V – X4.3 on D506 and across coil of contactor N2and N1 to X4.6 and X4.8 on D508.
  - 24V – X4.4 on D506
  - 210V – X4.1 on D506.
  - 230V – X4.2 on D506.

After 8 Secs of Switch ON the US contactor picks up –

- NC contacts 21-22 to open disconnecting charging resistors R1&R4.
- NC contacts 31-32 open thus disconnecting discharge resistors R2&R3.
- NO contacts 43-44 and 13-14 close connecting mains voltage through NC contact 21-22 of LN, V1, capacitor bank and across D61+ and D61-.

Copyright © SIEMENS LTD. All rights reserved. For internal use only

The line voltage is monitored by the microcontroller, if it falls below 200V AC the LN contactor picks up through the K6 relay on D506

- And opening the NC contact 21-22.
- Causing NO contact 13-14 to close and routing 0-220V AC from primary winding of mains transformer T1 through X9.2, X9.3 to V1, capacitor bank and across D61+ and D61-.

1.1.2 For Units with 110V Supply

When the MCB is switched ON, Line and Neutral is routed through line filter, U1,U2 fuses, and a mains voltage of 110V AC appears at the terminal block and mains voltage of 240V appears across X1.1 and X1.2 on D506. On D506, this mains voltage of 240V AC is then stepped down to 15 V AC, rectified and regulated to 12 VDC which is used to energize ON /OFF relay coils K1 & K2.

The unit is switched on by depressing the switch on D507; the circuit for the relay coil K2 is complete as K2 contact 6-8 closes. With K2 5-7 also close, the mains voltage is now available at the following points:

- X1.5 and X1.2 – CS contactor coil.
- X1.7 and X1.2 - CCU
- X1.9 and X1.2 - through K3 relay NO contact 4-8 to US contactor coil.
- X1.10 and X1.2 - through K5 relay NO contact 4-8 to DL contactor coil.
- LN and X1.2 - through K6relay NO contact 4-8 to LN contactor coil.
- X1.6 and X1.4 –
  - Through SMPS 1, X15 on D915, X3.10 (+15V) X3.9 (AG), X3.8 (-15V) on D508.
  - Through SMPS 2, X3.1 (+15V) X3.3 (+5V), X3.2 (-DG &AG) on D508.
- X1.8 and X1.3 –
  - Through SMPS D982 and across X4.6, X4.8
  - Through SMPS D985 and across X4.7, X4.8.

With CS contactor energised:

- NO contacts 14-13 close –
  240V AC routed through parallel combination of R1and R4 resistors, NC contacts 21-22 of US contactor, NC contacts 21-22 of LN contactor across pin 1&2 of main bridge rectifier V1 charges capacitor bank and through NC contacts 31-32 of US, parallel combination R3, R2.
- At the secondary of the mains transformer T1 :
  - NO contacts 33-34 close – 0V to X4.5 and X4.7on D506
  - NO contacts 43-44 close –24V to X4.3 on D506 and across coil of contactor N2and N1 to X4.6 and X4.8 on D508.
  - NO contacts 53-54 close – 29V to X4.4 on D506
  - NO contacts 63-64 close – applies 230V to X4.1 on D506.

The line voltage is monitored by the microcontroller, if it falls below 100V AC the LN contactor picks up through the K6 relay on D506

- And opening the NC contact 21-22.

Causing NO contact 13-14 to close and routing 0-250V AC from primary winding of mains transformer T1 to V1, capacitor bank and across D61+ and D61-.
After 8 Secs of Switch ON the US contactor picks up –

Copyright © SIEMENS LTD. All rights reserved. For internal use only

- NC contacts 21-22 to open disconnecting charging resistors R1&R4.
- NC contacts 31-32 open thus disconnecting discharge resistors R2&R3.
- NO contacts 43-44 and 13-14 close connecting mains voltage through NC contact 21-22 of LN, V1, capacitor bank and across D61+ and D61-.

1.2Motor Operation

N1 and N2 contactors are energised through secondary of the mains transformer T1 the mains voltage is now made available to the column lifting induction motor.

- Up movement:
  When up movement S1/ S11 switch on D507/D509 is selected, K1 relay on D508 drives the N1contactor causing 13 –14 NO contacts to close and 21-22 NC contacts to open. For upward movement 240V AC is applied through 13-14 contacts of N1, 21-22 NC contacts of N2, fuse U4, motor winding U5 fuse to mains neutral.
- Down movement:
  When down movement S2/S10 switch on D507/D509 is selected, K2 relay on D508 drives the N2contactor causing 13 –14 NO contacts to close and 21-22 NC contacts to open. For downward movement 240V AC is applied through 13-14 contacts of N2, 21-22 NC contacts of N1, fuse U4, motor winding U5 fuse to mains neutral.

The upward /downward movement is limited by UP limit NC / DN limit NC through X4.1, X4.2 / X4.3, X4.4 on D508.

1.3Fluoroscopy/ Radiography mode selection

When fluoroscopy mode is selected on D509 -

- 15v from D985 SMPS is applied through X4.7, X4.8 on D506, K4 relay, X2.3, X2.4 on D506, NC contacts 31-32 of DL contactor to small focus 12 on D502.
- When a x-ray is triggered through the foot switch or hand held Fluoro switch, Reg pulses from D915 is applied to D61.The output of D61 across A2, A3 is given to inductor L2, resonating capacitor C5, NC contacts 21-22 of DL contactor to U/V on D502.

When Radiography mode is selected on D509 –

- K5 relay coil on D506 is energised. This activates DL contactor coil, closing NO contacts 13-14,43-44.
- 24v from D982 SMPS is applied through X4.6, X4.8 on D506, K4 relay, X2.3, X2.4 on D506, closed contacts 43-44 of DL contactor to large focus 22 on D502.
- When a exposure is triggered through the one step hand held exposure release switch, Reg pulses from D915 is applied to D61.The output of D61 across A2, A3 is given to inductor L2, resonating capacitor C4, closed contacts 21-22 of DL contactor to U/V on D502.

1.4 Switching off the Unit

When the unit is switched OFF by depressing the switch on D507, the relay coil K1 on D506 is energised causing NC contacts 4-6 of K1 to open thereby disconnecting K2 relay. The DC voltage across the capacitor bank discharges through US NC Contact 32-31 and Resistor R2 and R3.

Copyright © SIEMENS LTD. All rights reserved. For internal use only